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A re-evaluation of the lignocellulolytic *Agaricomycetes* from the Brazilian semi-arid region

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Abstract — A checklist of the lignocellulolytic *Agaricomycetes* from the Brazilian semi-arid region is provided. It presents data on the distribution of 37 species, 10 families and six orders (*Agaricales*, *Auriculariales*, *Gloeophyllales*, *Hymenochaetales*, *Polyporales*, and *Russulales*). Twenty-eight taxa previously recorded from the studied region are excluded. The full checklist is available at www.mycotaxon.com/resources/weblists.html.

Key words: Caatinga, *Basidiomycetes*, *Aphyllophorales*

Introduction

Agaricomycetes (sensu Hibbett et al. 2007) or *Basidiomycetes* (sensu Kirk et al. 2001) comprises almost 21,000 species of *Basidiomycota* (Kirk et al. 2008) and includes wood-decomposing, parasitic, and ectomycorrhizal fungi (Hibbett 2006). The wood-decomposing fungi are termed lignocellulolytic because their enzymes are able to degrade wood hemi-cellulose, cellulose, and/or lignin, thus causing white and brown rots in plant species (Holf et al. 2004). Northeastern Brazil's semi-arid region (3–7° S and 35–45°W, 955.000 Km^2) encompasses parts of nine States (Fig. 1).The Köppen classification of the climate is 'Bsh' (hot and dry), with an annual mean temperature 25.5°C and characterized by a short rainy (3–5 mos) and long dry (7–9 mos) season; the annual mean precipitation is 600 to 1045 mm (Moura & Ramos 2004). The area is dominated by Caatinga (seasonally dry tropical forest sensu Pennington et al. 2000), composed of typically tropophilous and thorny medium to low xerophytes, where succulent species of the plant families *Cactaceae*, *Euphorbiaceae*, and *Bromeliaceae* stand out in the landscape (Andrade-Lima 1981). Father Camille Torrend was the first researcher to collect and study lignocellulolytic *Agaricomycetes* in this Brazilian biome (Torrend 1940). The 18 *Agaricomycetes*

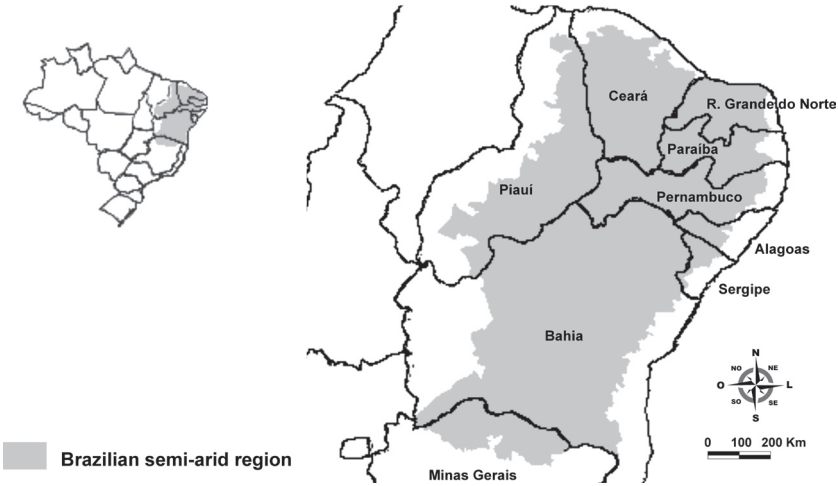

FIGURE 1. Brazilian semi-arid region (modified from: SPR/MI, www.mi.gov.br)

species taxonomically and nomenclaturally revised by Drechsler-Santos et al. (2008a) are deposited in URM, as cited by Maia & Gibertoni (2002). Other works that cover *Agaricomycetes* from this semi-arid region include Góes-Neto et al. (2003), Góes-Neto & Baseia (2006), and Drechsler-Santos et al. (2007). Considering the paucity of information on lignocellulolytic *Agaricomycetes* of Brazil's semi-arid region, this study represents a first comprehensive analysis of the diversity of lignocellulolytic *Agaricomycetes* in this unique biome.

Material and methods

This study was based on bibliographic research (Torrend 1940, Maia 1960, Góes-Neto 1999, Maia & Gibertoni 2002, Góes-Neto et al. 2003, Góes-Neto & Baseia 2006, Drechsler-Santos et al. 2007, 2008a) and revision of fungi exsiccata now curated in ALCB, CEPEC, HUEFS, and URM (Holmgren et al. 1990). The distribution of the species is provided according to occurrence in the States. Nomenclature and classification systems follow those of Hibbett et al. (2007), Index Fungorum (www.indexfungorum.org), and Centraalbureau voor Schimmelcultures (www.cbs.knaw.nl).

Results and discussion

The 37 lignocellulolytic *Agaricomycetes* species reported from Northeastern Brazil's Caatinga region represent 10 families and six orders. *Polyporales* is represented by 23 (62.2%) species, followed by eight (21.6%) species in the *Hymenochaetales*. The higher diversity of *Polyporales* agrees with results of other basidiomycete inventories in both Southern Brazilian subtropical (Drechsler-Santos et al. 2008b) and tropical Northeastern Brazilian Atlantic

forests (Gibertoni et al. 2004). *Polyporaceae* Fr. ex Corda is represented by the highest number of species (17, or 45.9% of the total), followed by 8 species in *Hymenochaetaceae* Imazeki & Toki. The genus with the highest number of species represented is *Phellinus* Quél. s.l. (six, 16.2%). Bahia is the State with highest number of species (33, 89.2%), of which 29 (78.4%) were recorded exclusively in the Bahian semi-arid. Pernambuco is represented by five (13.5%) species, of which *Ganoderma stipitatum* (Murrill) Murrill, *Gloeophyllum striatum* (Sw.) Murrill, and *Phylloporia chrysites* (Berk.) Ryvarden are reported only in this State. *Fomes fasciatus* (Sw.) Cooke was recorded only in Piauí. Only one species each is recorded for the Ceará and Paraíba semi-arid regions: *Favolus tenuiculus* P. Beauv. and *Pycnoporus sanguineus* (L.) Murrill, respectively. No representatives of lignocellulolytic *Agaricomycetes* have been reported from the semi-arid regions of Minas Gerais, Sergipe, Alagoas, or Rio Grande do Norte. Among the species identified thus far, only *Gloeophyllum striatum* causes brown rot; as observed in other tropical and subtropical areas (Nakasone 1996), all other (97.3%) species cause white-rot. We have excluded 28 taxa reported earlier because their exsiccata were not found or are in very poor condition (Drechsler-Santos et al. 2008a). The 37 species of this checklist represent our current knowledge of the diversity and distribution of lignocellulolytic *Agaricomycetes* in Northeastern Brazil's semi-arid region. Further investigations, however, will certainly increase the number fungal records and expand the reported species ranges throughout the area.

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